

**REMARKS**

Claims 18, 20, 22, 24, 25, 28-30, 33 and 34 are pending. By this Amendment, claims 18, 29 and 34 are amended to incorporate the features of claims 19, 21, 23, 26 and 27, claims 20 and 30 are amended for dependency or form, and claims 19, 21, 23, 26, 27, 31 and 32 are canceled without prejudice or disclaimer. No new matter is added.

The Office Action rejects claims 18-34 under 35 U.S.C. §103(a) over Murata et al. (U.S. Patent No. 6,445,833, hereinafter "Murata") and Isao et al. (JP 2002-123842, hereinafter "Isao"). The rejection of canceled claims 19, 21, 23, 26, 27, 31 and 32 is moot. Applicant respectfully traverses the rejection of the remaining claims.

Murata and Isao, either alone or in combination, do not teach or render obvious that in a calculating step, a Z-value of each target pixel is obtained by adding predetermined weights to color components of image data of the target pixel, as recited in independent claim 18, and as similarly recited in independent claims 29 and 34.

The Office Action asserts that col. 7, lines 1-21 of Murata disclose the claimed obtained Z-value of the target pixel of independent claims 18, 29 and 34. See page 5 of the Office Action. Applicant respectfully disagrees.

Murata merely discloses that a luminance (integration) value, a high frequency component (integration) value and a luminance contrast are calculated based on an input luminance (Y) signal of a 2-D image, and a chroma (integration) value is calculated based on input R-Y and B-Y signals of the 2-D image. Further, Murata merely discloses that a value of depth information is calculated based on the luminance value, the high frequency component value, the luminance contrast and the chroma value. See col. 14, line 58 to col. 15, line 27 and Fig. 13 of Murata. In other words, Murata merely discloses that the inputted Y signal, R-Y signal and B-Y signal are used to calculate the value of depth information, and further, does not disclose that any predetermined weight is added to these signals. Therefore,

Murata does not disclose the claimed obtained Z-value of the target pixel by adding predetermined weights to color components of image data of the target pixel. In particular, col. 7, lines 1-21 of Murata merely disclose that an R-Y integration value and a B-Y integration value are used to calculate group depth information. In other words, these disclosures of Murata do not teach that the predetermined weights are added to components of R, G, B, and that the depth information of each pixel is calculated based on the components of R, G, B. Thus, Murata does not disclose that in a calculating step, a Z-value of each target pixel is obtained by adding predetermined weights to color components of image data of the target pixel, as recited in independent claim 18, and as similarly recited in independent claims 29 and 34.

Isao does not remedy the above-noted deficiencies of Murata. Isao does not disclose that in a calculating step, a Z-value of each target pixel is obtained by adding predetermined weights to color components of image data of the target pixel, as recited in independent claim 18, and as similarly recited in independent claims 29 and 34.

Furthermore, Murata and Isao, either alone or in combination, do not teach or render obvious that in an adjusting step, (a) Z-values of each pixel are adjusted so that a single step available for a Z-value of a pixel corresponding to an object located backward in an original image express deeper depth than a single step available for a Z-value of a pixel corresponding to an object located forward in the original image, (b) an average of Z-values of all pixels within an area which includes the target pixel is obtained and the Z-value of the target pixel is replaced by the obtained average, (c) a step size of quantization of the Z-value is determined based on a value of a parameter specified by a user; and (d) either an upper limit or a lower limit of the calculated Z-value is determined based on the value of the parameter specified by the user, as recited in independent claim 18, and as similarly recited in independent claims 29 and 34.

The Office Action asserts that col. 7, lines 40-46 of Murata disclose that the Z-values of each pixel are adjusted so that a single step available for a Z-value of a pixel corresponding to an object located backward in an original image expresses deeper depth than a single step available for a Z-value of a pixel corresponding to an object located forward in the original image, as recited in independent claim 18, and as similarly recited in independent claims 29 and 34. See page 5 of the Office Action. Applicant respectfully disagrees.

Murata merely discloses that the depth information of each of parallax calculation regions is corrected based on perspective image characteristic value of each of parallax calculation regions. See col. 7, lines 40-46, and Figs. 15-17 of Murata. In other words, Murata does not disclose the depth information of each pixel is corrected. Therefore, Murata does not disclose that the Z-values of each pixel are adjusted, as recited in independent claim 18, and as similarly recited in independent claims 29 and 34.

Further, the Office Action asserts that col. 35, lines 52-67 of Murata disclose that the Z-value of the target pixel is replaced by an average of Z-values of all pixels within an area which includes the target pixel, as recited in independent claim 18, and as similarly recited in independent claims 29 and 34. See page 6 of the Office Action. Applicant respectfully disagrees.

Murata merely discloses that an average of the depth information of each group that is a plurality of parallax calculation regions is calculated, and the depth information of each of parallax calculation regions is corrected based on each calculated average. See col. 35, lines 52-67 of Murata. In other words, Murata merely disclose using the average of the depth information of each group, not one pixel. Therefore, Murata does not disclose that the Z-value of the target pixel is replaced by an average of Z-values of all pixels within an area which includes the target pixel, as recited in independent claim 18, and as similarly recited in independent claims 29 and 34.

Additionally, the Office Action asserts that col. 7, lines 10-24 of Murata disclose the claimed step size of quantization of the Z-value and the claimed upper limit or lower limit of the calculated Z-value of independent claims 18, 29 and 34. See pages 6-7 of the Office Action. Applicant respectfully disagrees.

Murata merely discloses that the depth information is calculated based on one or more chosen perspective image characteristic values. See col. 7, lines 10-24 of Murata. Therefore, Murata does not disclose that a step size of quantization of the depth information is chosen. Further, Murata does not disclose that an upper limit or a lower limit of the calculated depth information is chosen. Thus, Murata does not disclose that claimed step size of quantization of the Z-value and the claimed upper limit or lower limit of the calculated Z-value of independent claims 18, 29 and 34.


Isao does not remedy the above-noted deficiencies of Murata. Specifically, Isao does not disclose the claimed adjusting step, as recited in independent claims 18, and as similarly recited in independent claims 29 and 34.

Therefore, for at least these reasons, independent claims 18, 29 and 34 define patentable subject matter. Claims 20, 22, 24, 25, 28, 30 and 33 depend from independent claims 18 and 29, respectively, and therefore also define patentable subject matter for at least the reasons discussed above, as well as for the additional features they recite. Accordingly, Applicant respectfully requests withdrawal of the rejection.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Attachment:  
Petition for Extension of time

Date: January 29, 2009

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